

Listing of Claims

This listing of claims replaces all previous listings of claims.

1. (Previously Presented) A triangulated mobile gantry crane, comprising:

(A) first, second, and third booms, each of which has a vertical axis and comprises 1) a mobile base that is independently supported on the ground, that is rotatable about the vertical axis to steer the crane and 2) a lift leg that is extendible about the vertical axis, that is supported on said base, and that has an upper end, said first boom being positioned laterally between and longitudinally remote from said second and third booms, wherein first, second, and third horizontal lines interconnecting said first, second, and third booms form an acute triangle;

(B) a plurality of horizontal beams that functionally interconnect said lift legs and that are raisable with coordinated lifting of said first, second, and third booms to lift a load from the ground, and wherein at least one of the beams is linearly extendible to increase the horizontal spacing between two of said booms;

(C) rigging that extends downwardly from the beams and that is detachably coupleable to the load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms.

2. (Previously Presented) A triangulated mobile gantry crane comprising:

(A) first, second, and third booms, each of which has a vertical axis and comprises 1) a mobile base that is independently supported on the ground and that is

rotatable about the vertical axis to steer the crane, and 2) a lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said first boom being positioned laterally between and longitudinally remote from said second and third booms;

(B) a plurality of horizontal beams that functionally interconnect said lift legs and that are raisable with coordinated lifting of said first, second, and third booms to lift a load from the ground, and wherein at least one of the beams is linearly extendible to increase the horizontal spacing between two of said booms, and wherein said beams include first, second, and third beams functionally interconnecting said upper ends of said lift legs to form an at least essentially triangular shape when viewed in top plan;

(C) rigging that extends downwardly from the beams and that is detachably coupleable to a load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms.

3. (Previously Presented) A triangulated mobile gantry crane comprising:

(A) first, second, and third booms, each of which has a vertical axis and comprises 1) a mobile base that is independently supported on the ground and that is rotatable about the vertical axis to steer the crane and 2) a vertically extendible lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said first boom being positioned laterally between and longitudinally remote from said second and third booms;

(B) a plurality of horizontal beams that functionally interconnect said lift legs, wherein said beams include first, second, and third beams functionally interconnecting said upper ends of said lift legs to form an at least essentially triangular shape when viewed in top plan, and wherein said first and second beams are extendible to increase the spacing between said first and second booms and said first and third booms, respectively; and

(C) rigging that extends downwardly from the beams and that is detachably coupleable to the load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms.

4. (Previously Presented) The gantry crane as recited in claim 3, wherein each of said first and second beams comprises a telescoping tube assembly comprising at least one inner tube and at least one outer tube slidable over the inner tube.

5. (Previously Presented) The gantry crane as recited in claim 4, where each of said first and second beams comprises a single inner tube positioned at least generally centrally of said beam, a first outer tube extending from said inner tube to the lift leg of said first boom, and a second outer tube extending from said inner tube to the lift leg of the associated one of said second and third booms, each of said outer tubes being extendible and retractable relative to said inner tube.

6. (Previously Presented) The gantry crane as recited in claim 5, wherein each of said first and second beams further comprises a pair of cylinders, each of which is operable to extend and retract one of said outer tubes relative to said inner tube.

7. (Previously Presented) A triangulated mobile gantry crane comprising:

(A) first, second, and third booms, each of which has a vertical axis and comprises 1) a mobile base that is independently supported on the ground and that is rotatable about the vertical axis to steer the crane and 2) a lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said first boom being positioned laterally between and longitudinally remote from said second and third booms; and

(B) a plurality of horizontal beams that functionally interconnect said lift legs, wherein said beams include first, second, and third beams functionally interconnecting said upper ends of said lift legs to form an at least essentially triangular shape when viewed in top plan, and wherein said third beam is extendible to increase the spacing between said second and third booms; and

(C) rigging that extends downwardly from the beams and that is detachably coupleable to a load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms.

8. (Previously Presented) The gantry crane as recited in claim 7, wherein said third beam comprises a hydraulic cylinder extending between said first and second beams.

9. (Previously Presented) The gantry crane as recited in claim 2, wherein each of said first and second beams has multiple mounting points in the vicinity of said second and third booms, respectively, for selectively receiving an associated end of said third beam at one of a plurality of discrete mounting locations.

10. (Previously Presented) The gantry crane as recited in claim 1, wherein said first boom comprises a front boom located adjacent a lateral centerline of said gantry crane and said second and third booms are rear booms located on opposite sides of said lateral centerline.

11. (Previously Presented) The gantry crane as recited in claim 1, wherein each of said mobile bases comprises a wheel.

12. (Previously Presented) The gantry crane as recited in claim 1, wherein each of said bases is rotatable about the associated vertical axis through an angle of 360 ° relative to the associated lift leg.

13. (Previously Presented) A triangulated mobile gantry crane, comprising:

(A) first, second, and third booms, each of which extends along a vertical axis and comprises 1) a mobile base that is independently supported on the ground and 2) a

vertically extendible lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said mobile base being rotatable about the vertical axis through an angle of at least 360° with respect to said lift leg to steer said gantry crane, wherein

(1) said first boom is a front boom positioned at a lateral centerline of said gantry crane;

(2) said second and third booms are rear booms positioned on opposite sides of said lateral centerline;

(3) first, second, and third horizontal lines interconnecting said first, second, and third booms form an acute triangle;

(B) first and second lift beams functionally interconnecting the lift legs of said first and second booms and said first and third booms, respectively;

(C) a rear cross beam functionally interconnecting the lift legs said second and third booms to one another, wherein the first and second lift beams are raisable with coordinated lifting of said first, second, and third booms to lift a load, and wherein at least one of the beams is linearly extendible to increase the horizontal spacing between two of said booms; and

(D) rigging that extends downwardly from the lift beams and that is detachably coupleable to a load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms, the rigging comprising at least one of straps, chains, and cables.

14. (Previously Presented) A triangulated mobile gantry crane, comprising:

(A) first, second, and third booms, each of which extend along a vertical axis and comprises 1) a mobile base and 2) a lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said mobile base being rotatable about the vertical axis through an angle of at least 360 ° with respect to said lift leg to steer said gantry crane, wherein

(1) said first boom is a front boom positioned at a lateral centerline of said gantry crane;

(2) said second and third booms are rear booms positioned on opposite sides of said lateral centerline;

(3) first, second, and third horizontal lines interconnecting said first, second, and third booms form an acute triangle;

(B) first and second horizontal lift beams functionally interconnecting the lift legs of said first and second booms and said first and third booms, respectively;

(C) a rear horizontal cross beam functionally interconnecting the lift legs of said second and third booms to one another, wherein

said first and second lift beams are extendible to increase the spacing between said first and second booms and said first and third booms, respectively, wherein each of said first and second lift beams comprises a single inner tube positioned at least generally centrally of said beam, a first outer tube extending from said inner tube to the lift leg of said first boom, and a second outer tube extending from said inner tube to the lift leg of the associated one of said second and third booms, each of said outer tubes being extendible and retractable relative to said inner tube; and

(D) rigging that extends downwardly from the lift beams and that is detachably coupleable to a load after the gantry crane is transported to a position in which at least one of the lift beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms, the rigging comprising at least one of straps, chains, and cables.

15. (Previously Presented) The gantry crane as recited in claim 14, wherein each of said first and second lift beams further comprises a pair of cylinders, each of which is operable to extend and retract one of said outer tubes relative to said inner tube.

16. (Previously Presented) A triangulated mobile gantry crane comprising:

(A) first, second, and third booms, each of which extends along a vertical axis and comprises 1) a mobile base and 2) a vertically extendible lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said mobile base being rotatable the vertical axis through an angle of at least 360 ° with respect to said lift leg to steer said gantry crane, wherein

(1) said first boom is a front boom positioned at a lateral centerline of said gantry crane;

(2) said second and third booms are rear booms positioned on opposite sides of said lateral centerline;

(3) first, second, and third horizontal lines interconnecting said first, second, and third booms form an acute triangle;

(B) first and second horizontal lift beams functionally interconnecting the lift legs of said first and second booms and said first and third booms, respectively;

(C) a rear horizontal cross beam functionally interconnecting the lift legs said second and third booms to one another, wherein said rear cross beam comprises a hydraulic cylinder extending between said first and second lift beams and operatively connectable to each of said first and second lift beams at multiple discrete mounting locations; and

(D) rigging that extends downwardly from the lift beams and that is detachably coupleable to a load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms.

17. (Previously Presented) A method comprising;

(A) moving a mobile triangulated gantry crane over a load by straddling said load with an open front end of said gantry crane and positioning said load longitudinally between said open front end and a closed rear end, said rear end of said gantry crane comprising a first boom positioned laterally between and longitudinally remote from second and third booms, each of the booms extending along a respective vertical axis, wherein first, second, and third horizontal lines interconnecting said first, second, and third booms form an acute triangle; then

(B) coupling at least one of first, second, and third horizontal beams to said load, said first, second, and third horizontal beams functionally interconnecting said first, second, and third booms to one another; then

(C) extending said first, second, and third booms along the respective vertical axes in a coordinated manner to raise said first, second, and third horizontal beams and to lift said load; and

(D) linearly horizontally extending at least one of said beams to increase the horizontal spacing between two of the booms.

18. (Previously Presented) A method comprising;

(A) moving a mobile triangulated gantry crane over a load by straddling said load with an open front end of said gantry crane and positioning said load longitudinally between said open front end and a closed rear end, said rear end of said gantry crane comprising a first boom positioned laterally between and longitudinally remote from second and third booms, wherein each of the booms extends along a respective vertical axis and, and wherein first, second, and third horizontal lines interconnecting said first, second, and third booms form an acute triangle rotatable; then

(B) coupling at least one of first, second, and third horizontal beams to said load, said first, second, and third horizontal beams functionally interconnecting said first, second, and third booms to one another; then

(C) extending said first, second, and third booms along the respective vertical axes to lift said load; and

(D) extending said third beam prior to said moving step so as to increase the spacing between said second and third booms sufficiently to permit a rear end of said gantry crane to straddle said load.

19. (Previously Presented) The method as recited in claim 18, further comprising extending said first and second beams to increase the length of said gantry crane.

20. (Currently Amended) The method as recited in claim 17, wherein each of said booms includes a base and a lift leg mounted on said base, and further comprising steering said gantry crane vehicle by rotating the base of at least one of said booms about the respective vertical axis through an angle of at least 360° with respect to the associated lift leg.

21. (Previously Presented) A triangulated mobile gantry crane comprising:

(A) a boom assembly consisting of first, second, and third horizontally spaced booms, each of which extends along a vertical axis and comprises 1) a mobile base that is independently supported on the ground and 2) a lift leg that is supported on said base, that is extendible along the vertical axis, and that has an upper end, said first boom being positioned laterally between and longitudinally remote from said second and third booms;

(B) a plurality of horizontal beams that functionally interconnect said lift legs and that are raisable with coordinated lifting of said first, second, and third booms to lift a load, and wherein at least one of the beams is linearly extendible to increase the horizontal spacing between two of said booms; and

(C) rigging that extends downwardly from the beams and that is detachably coupleable to a load after the gantry crane is transported to a position in which at least one of the beams is located over the load, the rigging lifting the load from the ground upon subsequent extension of said booms and that then being releasable from the load upon subsequent retraction of the said booms.

22. (Previously Presented) The method of claim 17, wherein the coupling step is performed using rigging suspended from the at least one beam, and further comprising

while said booms are extended, moving said gantry crane to transport the load; then

retracting said first, second, and third booms about the respective vertical axes to lower the load onto the ground; and then

releasing said rigging to decouple said at least one of said first, second, and third horizontal beams from the load.

23. (Previously Presented) The method of claim 18, wherein the coupling step is performed using rigging suspended from the at least one beam, and further comprising:

while said booms are extended, moving said gantry crane to transport the load; then

retracting said first, second, and third booms about the respective vertical axes to lower the load onto the ground; and then

releasing said rigging to decouple said at least one of said first, second, and third horizontal beams from the load.